

Applicants: Sosa, et al.
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AMENDMENTS TO THE CLAIMS:

This listing of claims replaces the listing of claims in the application.

Listing of Claims:

CLAIMS

What is claimed is:

1) (Currently Amended) An artificial promoter characterized for being a recombinant DNA molecule promoting expression in plant cells of a ~~any~~ DNA sequence fused to its 3' end, comprising:

- a) a ~~A~~ 5' transcription regulator element followed by,
- b) an ~~An~~ artificial core promoter comprising a TATA box, a nucleotide sequence with a GC content lower than 64% and a transcription initiation site fused in its 3' end to,
- c) a ~~A~~ synthetic nucleotide sequence transcriptable but not translatable, conformed by a first chimerical Exon, an artificial Intron able to enhance the expression of genes fused to it in plant cells, and a second chimerical Exon with translation enhancement properties of a ~~any~~ gene inserted downstream.

2) (Currently Amended) An artificial promoter according to Claim 1 ~~characterized for being a recombinant DNA molecule~~ wherein ~~where~~ the 5' transcription regulation element is artificial.

3) (Currently Amended) An artificial promoter according to Claim 1 ~~characterized for being a recombinant DNA molecule~~ wherein ~~where~~ the 5' transcription regulation element is homologous to a DNA sequence that naturally enhances and/or regulates gene expression in plant cells.

4) (Currently Amended) An artificial promoter according to Claim 3 ~~which~~ wherein the 5' transcription regulation element is ~~comes~~ from rice actin-1 gene.

- 5) (Currently Amended) An artificial promoter according to Claim 4, ~~where~~ wherein the its 5' transcription regulation element comprises the region from -43 to -310 ~~of the~~ from rice actin-1 gene transcription initiation site.
- 6) (Currently Amended) An artificial promoter according to Claim 5 wherein the 5' transcription regulation element nucleotide sequence corresponds to ~~sequence in~~ SEQ ID NO: 10 or to a fragment thereof ~~of it~~.
- 7) (Currently Amended) An artificial promoter according to Claim 5 wherein the 5' transcription regulation element nucleotide sequence corresponds to ~~sequence in~~ SEQ ID NO: 11 or to a fragment thereof ~~of it~~.
- 8) (Currently Amended) An artificial promoter according to Claim 3 wherein the ~~where its~~ 5' transcription regulation element is ~~comes~~ from maize ubiquitin-1 gene.
- 9) (Currently Amended) An artificial promoter according to Claim 8 wherein the 5' transcription regulation element nucleotide sequence comprises the region from -299 to -855 ~~of the~~ from maize ubiquitin-1 gene transcription initiation site.
- 10) (Currently Amended) An artificial promoter according to Claim 9 wherein the 5' transcription regulation element corresponds to ~~sequence in~~ SEQ ID NO: 19 or to a fragment thereof ~~of it~~.
- 11) (Currently Amended) An artificial promoter according to ~~Claims~~ Claim 2 and 3 wherein ~~the where its~~ 5' transcription regulation element is an *as-1*-like transcriptional enhancer.
- 12) (Currently Amended) An artificial promoter according to Claim 11 wherein the ~~where~~ nucleotide sequence of *as-1*-like transcriptional enhancer is essentially identical to the sequence fragment corresponding to nucleotides 7 to 26 of ~~in~~ SEQ ID NO: 13, or to the complementary sequence.
- 13) (Currently Amended) An artificial promoter according to Claim 3 wherein the ~~where its~~ 5' transcription regulation element is ~~comes~~ from a viral promoter.
- 14) (Currently Amended) An artificial promoter according to Claim 13 wherein the ~~where its~~ 5' transcription regulation element is ~~comes~~ from CaMV 35S promoter.

15) (Currently Amended) An artificial promoter according to Claim ~~Claims 2 and 3~~ wherein the 5' transcription regulation element controls gene expression in plant cells with development-, organ- or tissue-specificity.

16) (Currently Amended) An artificial promoter according to Claim 15 wherein the ~~where its~~ 5' transcription regulation element controls expression in seeds.

17) (Currently Amended) An artificial promoter according to Claim 16 wherein the ~~where its~~ 5' transcription regulation element is ~~comes~~ from rice gluteline B-1 gene.

18) (Currently Amended) An artificial promoter according to Claim 17, wherein the ~~where~~ its 5' transcription regulation element comprises a fragment of the region from -31 to -245 from the rice gluteline B-1 gene transcription initiation site.

19) (Currently Amended) An artificial promoter according to Claim 18 wherein the 5' transcription regulation element corresponds to ~~sequence in~~ SEQ ID NO: 21 or to a fragment thereof ~~of it~~.

20) (Original) An artificial promoter according to Claim 15 wherein the 5' transcription regulation element controls gene expression in plant cells under biotic or abiotic stress.

21) (Currently Amended) An artificial promoter according to Claim 15 wherein the ~~where its~~ 5' transcription regulation element controls gene expression in wounded plant tissues.

22) (Currently Amended) An artificial promoter according to Claim 1 wherein the 5' transcription regulation region comprises 2 or more regulator elements from different origin operatively fused, ~~which individually responds to any of the characteristics said on claims from 2 to 21.~~

23) (Original) An artificial promoter according to Claim 1 wherein the first Exon from the artificial Exon/Intron/Exon region comprises sequence motifs C and A rich.

24) (Currently Amended) An artificial promoter according to Claim 1 wherein the first Exon from the artificial Exon/Intron/Exon region comprises sequences wherein the motif CTCC and/or its homologous sequences CTC, TCC and TC are frequently repeated ~~the motif CTCC and/or its homologous sequences CTC, TCC and TC.~~

25) (Currently Amended) An artificial promoter according to Claim 1, which Intron from the artificial Exon/Intron/Exon region comprises sequences wherein ~~where~~ the CTCC motif and/or its homologous sequences CTC, TCC and TC are frequently repeated.

26) (Currently Amended) An artificial promoter according to Claim 23 ~~Claims from 23 to 25~~ wherein the nucleotide sequence of the artificial Exon/Intron/Exon region corresponds to SEQ ID NO: 6 or ~~to~~ a fragment thereof ~~of it~~.

27) (Original) An artificial promoter according to Claim 1 wherein the second Exon from the artificial Exon/Intron/Exon region comprises sequence motifs with high C and A content.

28) (Currently Amended) An artificial promoter according to Claim 1 wherein the second Exon from the artificial Exon/Intron/Exon region comprises a sequence having at least a ~~sequence~~ 83 % homolog with motif HCAYYY (H= C or ~~ó~~ T or ~~ó~~ A; Y= C or ~~ó~~ T).

29) (Currently Amended) An artificial promoter according to Claim ~~Claims 27 and 28~~ wherein the nucleotide sequence of the second Exon from the artificial Exon/Intron/Exon region corresponds to ~~sequence in~~ SEQ ID NO: 1.

30) (Currently Amended) An artificial promoter according to Claim 1 ~~Claims from 23 to 29~~ wherein nucleotide sequence of the artificial Exon/Intron/Exon region corresponds to SEQ ID NO: 8 or ~~with~~ a fragment thereof ~~of it~~.

31) (Currently Amended) An artificial promoter according to ~~any of the claim~~ claims from 1 to 30, wherein the nucleotide sequence of the artificial Exon/Intron/Exon region corresponds, at least partially, to ~~sequence in~~ SEQ ID NO: 20.

32) (Currently Amended) A DNA fragment from an artificial promoter according to Claim ~~Claims from 1 to 31~~ such that, when fused to a any promoter functional in plants, contributes to enhance expression of DNA sequences controlled by said promoter.

33) (Original) An artificial promoter fragment according to Claim 32 able to enhance translation of genes fused to it.

34) (Currently Amended) An artificial promoter fragment according to Claim 33, comprising a sequence having at least ~~a sequence~~ 83 % homolog with motif HCAYYY (H= C or é T or é A; Y= C or é T).

35) (Original) An artificial promoter fragment according to Claim 33 with sequence motifs C and A rich.

36) (Currently Amended) An artificial promoter fragment according to Claim 33 wherein the nucleotide sequence corresponds to ~~that on~~ SEQ ID NO: 1.

37) (Currently Amended) An artificial promoter fragment according to Claim ~~claims from 33 to 36~~ that contributes to enhance translation of mRNA's produced from the CaMV 35S promoter in plant cells.

38) (Original) An artificial promoter fragment according to Claim 32 corresponding to an Exon/Intron/Exon region.

39) (Original) An artificial promoter fragment according to Claim 38 wherein the first Exon comprises sequence motifs C and A rich.

40) (Currently Amended) An artificial promoter fragment according to Claim 38 wherein the ~~its~~ first Exon comprises sequences wherein where the motif CTCC and/or its homologous sequences CTC, TCC and TC are frequently repeated ~~the motif CTCC and/or its homologous sequences CTC, TCC and TC.~~

41) (Currently Amended) An artificial promoter fragment according to Claim 38 wherein the ~~its~~ Intron comprises sequences wherein where the motif CTCC and/or its homologous sequences CTC, TCC and TC are frequently repeated ~~the motif CTCC and/or its homologous sequences CTC, TCC and TC.~~

42) (Currently Amended) An artificial promoter fragment according to Claim 38 wherein the nucleotide sequence corresponds with sequence in SEQ ID NO: 6.

43) (Currently Amended) An artificial promoter fragment according to Claim 38 wherein the nucleotide sequence corresponds with sequence in SEQ ID NO: 8.

44) (Currently Amended) An artificial promoter fragment according to Claim ~~from claims 38 to 43~~ that contributes to enhance the expression of a any gene under the control of CaMV 35S promoter in plant cells.

45) (Original) An artificial promoter fragment according to Claim 32 corresponding to an as-1-like transcriptional enhancer.

46) (Currently Amended) An artificial promoter fragment according to Claim 32 which nucleotide sequence is essentially identical to that of the fragment corresponding to nucleotides 7 to 26 in SEQ ID NO: 13, or its complementary sequence.

47) (Original) An artificial promoter fragment according to Claim 32 corresponding to a 5' transcription regulation element.

48) (Currently Amended) An artificial promoter fragment according to Claim 47 wherein the 5' transcription regulation element is comes from rice actin-1 gene.

49) (Currently Amended) An artificial promoter fragment according to Claim 48 wherein the nucleotide sequence comprises a fragment from -43 to -310 of from rice actin-1 gene transcription initiation site.

50) (Currently Amended) An artificial promoter fragment according to Claim 49 wherein the nucleotide sequence corresponds to ~~sequence in~~ SEQ ID NO: 10 or ~~to~~ a fragment thereof ~~of~~ it.

51) (Currently Amended) An artificial promoter fragment according to Claim 49 wherein the nucleotide sequence corresponds to ~~sequence~~ SEQ ID NO: 11 or ~~to~~ a fragment thereof ~~of~~ it.

52) (Currently Amended) An artificial promoter fragment according to Claim 47 wherein the ~~where its~~ 5' transcription regulation element is comes from maize ubiquitine-1 gene.

53) (Currently Amended) An artificial promoter fragment according to Claim 52 wherein the nucleotide sequence comprises the region from -299 to -855 of from maize ubiquitine-1 gene transcription start site.

54) (Currently Amended) An artificial promoter fragment according to Claim 53 wherein the 5' transcription regulation element corresponds to ~~sequence in~~ SEQ ID NO: 19 or to a fragment thereof ~~of it~~.

55) (Currently Amended) A cassette for the expression of DNA sequences in plant cells containing an artificial promoter responding to ~~any of the claims from~~ Claim 1 ~~to 31~~.

56) (Currently Amended) A cassette for the expression of DNA sequences in plant cells containing a transcription enhancer element functionally fused to a DNA fragment according ~~responding to any of the claims from~~ Claim 32 ~~to 54~~.

57) (Currently Amended) A DNA vector for plant cell transformation comprising ~~one of the~~ an expression cassette ~~cassettes characterized in claims 55~~ for the expression of DNA sequences in plant cells containing an artificial promoter responding to claim 1 or for the expression of DNA sequences in plant cells containing a transcription enhancer element functionally fused to a DNA fragment from an artificial promoter according to claim 1 such that, when fused to a promoter functional in plants, contributes to enhance expression of DNA sequences controlled by said promoter 56.

58) (Currently Amended) A bacterial cell carrying vector ~~of~~ on claim 57 and its descendants.

59) (Currently Amended) A plant cell transformed with vector ~~of~~ on claim 57, and its descendants.

60) (Currently Amended) A plant cell ~~according to Claim 59~~ transformed with the vector of Claim 57, and its descendants, expressing the DNA fragment under the control of the artificial promoter in the expression cassette introduced by the means of the vector ~~described on claim 57~~.

61) (Currently Amended) A plant cell ~~according to Claim 59~~ transformed with the vector according to claim 57, and its descendants, wherein ~~with the expression cassette is characterized on claim 55 or 56~~ stably integrated into its genome.

62) (Currently Amended) A transgenic plant regenerated from the plant cell according to ~~characterized on~~ claim 61.

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63) (Currently Amended) A transgenic plant ~~according to Claim 62~~ regenerated from a plant cell transformed with the vector of claim 57, and its descendants, expressing the DNA fragment under the control of the artificial promoter comprised into the expression cassette introduced by the means of the vector ~~described on claim 57~~.

64) (Currently Amended) Transgenic plant descendants according to ~~characterized in~~ claim 63.

65) (Original) Plants according to Claim 64 being dicots.

66) (Original) Plants according to Claim 65 being Solanaceae.

67) (Original) Plants according to Claim 66 belonging to one of the following species: tobacco, tomato or potato.

68) (Original) Plants according to Claim 64 being monocots.

69) (Original) Plants according to Claim 68 being gramineae.

70) (Original) Plants according to Claim 69 belonging to one of the following species: rice, sugarcane, maize, wheat or barley.

71) (Currently Amended) The purification or use of recombinant proteins produced by cells or plants according to claim ~~Claims 60 or 63~~ as a result of the expression of the DNA fragments sited under the control of the artificial promoter comprised into the expression cassette introduced by the means of the vector ~~described on claim 57~~.

72) (New) The purification or use of recombinant proteins produced by cells or plants according to claim 63 as a result of the expression of the DNA fragments sited under the control of the artificial promoter comprised into the expression cassette introduced by the means of the vector.